Perception of consonant length is universal: Evidence from American and Russian listeners

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BACKGROUND

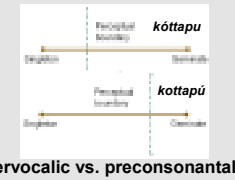
Russian geminates

- Post-stress
- Intervocalic
- Word-initial geminates

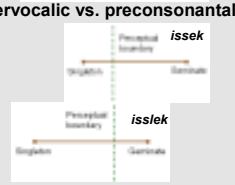
have an earlier perceptual boundary than

- Non-stress adjacent
- Preconsonantal
- Word-final geminates

Post-stress vs. elsewhere



Intervocalic vs. preconsonantal



Initial vs. final

Hypothesis

Earlier perceptual boundary provides articulatory and perceptual advantage for geminate production and discrimination:

Smaller articulatory effort needed to reach the geminate status

Less danger of perceptually driven neutralization

May explain a cross-linguistic preference for these types of geminates

Research question

Do relative positions of perceptual boundaries for these types of geminates show the same asymmetries across languages?

In particular in English – a language without phonemic consonant length.

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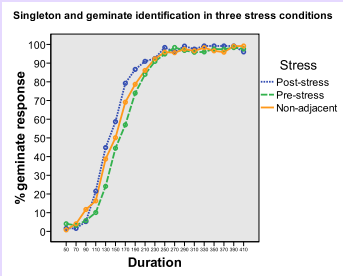
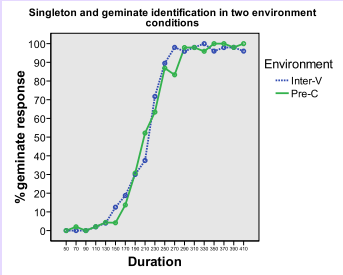
RESULTS

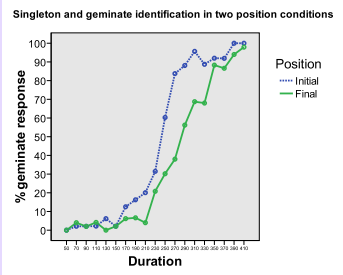
Russian listeners



Significant effect of Stress
Post-stress < Non-adjacent < Pre-stress

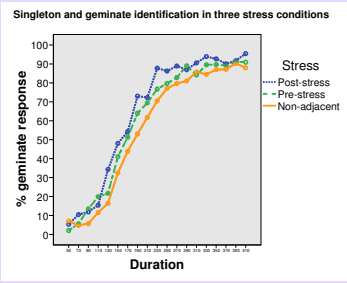


No significant effect of phonetic environment

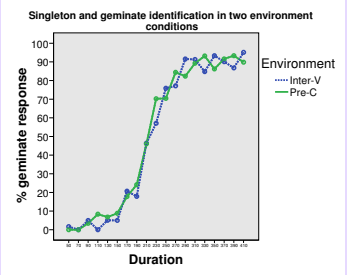


Significant effect of Position
Initial < Final

American listeners



Significant effect of Stress
Post-stress < Pre-stress < Non-adjacent



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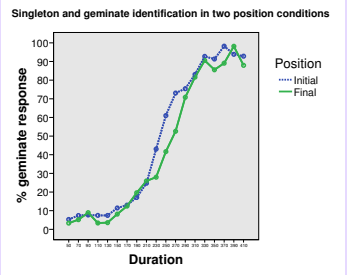

Significant effect of Position
Initial < Final

METHODS

Stimuli

- Non-words recorded by a native speaker of Russian
- Range of durations: 50 - 410ms in 20ms steps (19 variations of each item)
- 437 stimuli

kósapu – kosápu – kosapú
kóssapu – kossápu – kossapú

pos avap – po savap
poss avap – po ssavap

isek – islek
issek – isslek

Procedure

- Randomized stimuli
- 10-item practice trial
- 2 blocks, 5 min optional break
- 2.5 sec ISI
- Task: identify long or short consonant

Participants

- 24 Russian listeners
- 31 American listeners

CONCLUSIONS

Patterns of responses are very similar for both Russian and American listeners:
Earlier perceptual boundary for post-stress, intervocalic, and word-initial geminates.

Perception of the contrast between geminates and singletons has a linguistically universal basis.

Observed shift in perceptual boundary is responsible for cross-linguistic dominance of intervocalic and post-stress geminates.

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